

Movement in Labor and Delivery: Free Positions vs Lithotomic Positions. The Benefits Told by Women

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Abstract

Introduction and Purpose of the Study: The purpose of the study was to evaluate how the progress of labor and the expulsive period are closely related to the position taken by the woman. In particular, it refers to the comparison of outcomes in free and lithotomic positions in labor and expulsive period.

Movement, a peculiarity of labor/delivery, is studied through the analysis of the scientific literature and the advantageous of psycho-emotional and physical levels are also examined, comparing them to the associated risks of the lithotomic position. The free positions during the expulsive period, in fact, can solve cases at the limits of physiology and/or avoid emergencies in the delivery room.

Materials and Methods: Semi-quantitative observational study conducted on 115 mothers between March and April 2017 recruited at discharge. The questionnaire is divided into four sections: socio-demographic situation, management of labor, management of the expulsive period/maternal outcomes, maternal satisfaction. In the qualitative part, the experience of women regarding freedom of movement/possible postural coercions was collected.

Results: The analysis showed that women in free position had greater pain control through movement 59.13% free position 45.21%, breathing 42.6%, massage 6.95%, vocalizing 4.34%, shower 2.61%, compared to 20% who took the supine and semisupine position 6%. In free position, labor is resulted to be superior three hours in 15.65%, four hours in 10.43% and eight hours in 13.91%. In the supine position instead superior three hours in 8.7%, four in 5.22% and eight in 6.09%.

The perception of pain was not very painful in 53.91%, quite painful in 25.21% and very painful in 24.35% Vs the lithotomic position, where in 26.96% no benefit, very painful in 8.7% and very painful in 15.65%. The expulsive period was resulted to be shorter in free positions < 1 hour in 20.56% and > 1 hour in 8.41% than lithotomic one in 55.14% < 1 hour and in 15.88% > 1 hour. The use of the episiotomy is only in 5.6% in the first case and in 42.05% in the second, supported by the scarce presence of perineal lacerations in 14.95%, which reaches 41.12% in the supine position.

Discussion: The position, during the different stages of labor, takes importance in the normal progression of the same by acting on the duration, frequency and intensity of contractile activity.

Keywords: Labor; Delivery; Pain; Free Positions; Lithotomic Positions

Abbreviations

IOL: Induction of Labor; FHR: Fetal Heart Rate

Introduction

The freedom of women to choose positions during labor/delivery has been present since ancient times [1,2]. The extreme medicalization of childbirth has led to the almost obligatory choice of the woman's immobility, contrary to what is recommended by the major scientific societies which have defined its importance [3,4]. An analysis of the literature shows [1-9], in fact, that women in a free/upright position give birth more easily because the pelvis is able to expand as the fetus progresses [1-13]; gravity [1-4,8], in fact, is also useful for the fetus as the weight of the uterus will no longer be pressed on the main maternal blood vessels, improving utero-placental circulation [10-12,14]. The main objective of this study is, in fact, to evaluate how the progress of labor, the expulsive period or even the short-term fetal and neonatal outcomes are closely related to the position assumed by the woman and freedom of movement. In particular, reference is made to the comparison of the outcomes in the lithotomy position and in the free positions in labor and expulsive periods. In fact, we wanted to underline the benefits [15] both on a physical and psychoemotional level of the woman deriving from taking free positions in labor and in the expulsive period, as these can solve cases at the limits of physiology or avoid emergencies in the delivery room [2,16], while illustrating the reasons why the lithotomy position, on the contrary, is strongly discouraged even in the expulsive period.

Materials and Methods

A qualitative and quantitative monocentric observational survey was conducted with a convenience sampling. Initially, 165 mothers were contacted who gave birth at the Policlinico of Bari in the period between March 2017 and February 2018, both during hospitalization and at discharge. Of these 165 women, 50 of them could not be included in the study as they stated that they had requested analgesia in labor.

As regards the qualitative part of the study, of the 115 women in our sample only 94 of them gave answers. Informed consent was collected among the women recruited, after obtaining authorization to proceed with the study by the general and health management of the institution involved. In addition to having been explained the purpose of the survey, the women who joined were assured of being able to withdraw at any time. The study respects the principles of the Helsinki Convention.

Inclusion criteria

- Spontaneous birth
- Labor/delivery in free position
- Labor/delivery in a lithotomy position or with coercion of movement
- Good knowledge of the Italian language.

Exclusion criteria

- Request for childbirth analgesia
- Previous caesarean section
- Childbirth with an emergency caesarean section or in labor
- Lack of knowledge of the Italian language.

Data collection

The data were collected through the administration, to each participant, of a specific questionnaire developed on the literature review [10-11,14,17-29] aimed at evaluating the psychophysical benefits and neonatal outcomes of freedom of movement during labor and delivery. The questionnaire consisting of twenty-six questions was divided into a first part in which the socio-demographic situation of the sample was investigated and a second part divided into two sections, one dedicated to the development of labor and the other to the expulsive period. Both divided into two subsections concerning both labor and expulsive period in the lithotomy position and in the free position. Labor was examined and from the maternal point of view, focusing attention on pain control through the analgesic positions taken, choice of position or not, cardiotocographic monitoring. Finally, maternal satisfaction with reference to labor and delivery was analyzed. Instead in the qualitative part, two open questions [30-38] were prepared within the same questionnaire through which the women told their experience in the delivery room about the freedom to choose the position or, on the contrary, or any postural coercion [35-38].

The dissemination of the survey tools was possible through the administration of the questionnaire both at the time of admission/discharge and through online disclosure.

The data was collected in a single database, pertaining to the “Google Drive” platform and processed here.

Results

The study aims to understand how freedom of movement affects the course of labor and the benefits both on physical and psycho-emotional health of the woman.

After a brief socio-demographic description of the sample, the analysis of the results was divided into sections. Our sample (Table 1) is made up of 115 mothers with an average age of 30.4 ± 0.45* with a range (19 - 48) of which 33.9% declared having had a previous pregnancy. Of the women interviewed, 98% declared in the current gestation that they had completed: a spontaneous birth with a presentation of the fetus in 83.5% of cases in cephalic, compared to 7% with caesarean section. Regarding the gestational age of the sample, we have 4.4% with a gestational period of less than 37 weeks, 9.6% between 37 - 39 weeks of gestation, 18.2% between 39 - 41 weeks, 6.9% over 41 weeks and finally 10.45% did not give an answer.

| | <i>f_a</i> | <i>f_r</i> | Media (DS)*-RANGE |
|-----------------------------|----------------------|----------------------|-------------------------|
| Age | | | 30.4 ± 0.45*- (19 - 48) |
| ≤ 20 | 1 | 0.87% | |
| 20 - 30 | 37 | 32.17% | |
| 30 - 40 | 60 | 52.17% | |
| ≥ 40 | 5 | 4.35% | |
| No answer | 12 | 10.45% | |
| Previous pregnancies | | | |
| Yes | 39 | 33.9% | |
| No | 76 | 66.1% | |
| Gestational period | | | |
| < 37 | 5 | 4.4% | |
| 37 - 39 | 11 | 9.6% | |
| 39 - 41 | 21 | 18.2% | |
| > 41 | 8 | 6.9% | |
| No answer | 70 | 60.9% | |

| | | | |
|------------------------------|-----|-------|--|
| Delivery modalities | | | |
| Spontaneous birth | 107 | 93% | |
| Caesarean section | 8 | 7% | |
| Fetal presentation | | | |
| Cephalic | 96 | 83.5% | |
| Breech | 2 | 1.7% | |
| No answer | 17 | 14.8% | |
| Legend: | | | |
| f_a : Absolutely frequency | | | |
| f_r : Relative frequency | | | |
| DS*: Standard deviation | | | |

Table 1: Socio-demographic characteristics of the sample.

The second section concerns the management of labor divided in turn into two subsections relating to the management of the same in the free position and in lithotomy (Table 2).

| Labor in free positions vs lithotomic position | | | | |
|--|-------------------------|--------|--------------------------|--------|
| | Labor in free positions | | Labor in supine position | |
| | f_a | f_r | f_a | f_r |
| Modes of labor | | | | |
| Spontaneous | 64 | 55.65% | 24 | 20.87% |
| Inducted | 14 | 12.17% | 13 | 11.31% |
| If induction of labor (IOL) | | | | |
| Prostaglandin | 6 | 22.23% | 5 | 18.51% |
| Oxytocin | 5 | 18.51% | 8 | 29.63% |
| Others | 3 | 11.12% | - | - |
| Control of pain | | | | |
| Movement | 68 | 59.13% | - | - |
| Free positions | 52 | 45.21% | - | - |
| Vocalizations | 27 | 23.47% | 5 | 4.34% |
| Breathing | 49 | 42.60% | 34 | 29.56% |
| Immersion in water tank | 10 | 8.69% | - | - |
| Shower | 12 | 10.43% | 3 | 2.61% |
| Massages | 20 | 17.39% | 8 | 6.95% |
| Hot packs | 11 | 9.56% | - | - |
| Position assumed mostly during labor | | | | |
| Supine | - | - | 23 | 20% |
| On the side | - | - | 7 | 6.10% |
| Semi-supine | - | - | 7 | 6.10% |

| | | | | |
|--|----|--------|----|--------|
| Erect o standing | 27 | 23.49% | - | - |
| All fours | 8 | 6.95% | - | - |
| Squatting | 11 | 9.56% | - | - |
| Kneelling | - | - | - | - |
| Walking | 6 | 5.22% | - | - |
| Birthing ball | 10 | 8.69% | - | - |
| Water | 1 | 0.86% | - | - |
| Constant movement | 2 | 1.73% | - | - |
| Sitting | 5 | 4.35% | - | - |
| Liana | 8 | 6.95% | - | - |
| Fetal Heart Rate (FHR) auscultation | | | | |
| Continuously | 27 | 23.48% | 25 | 21.74% |
| Intermittently | 51 | 44.35% | 12 | 10.43% |
| Oxytocic infusion | | | | |
| Yes | 14 | 12.18% | 12 | 10.43% |
| No | 64 | 55.65% | 25 | 21.74% |
| Emergency caesarean section during labor | | | | |
| Yes | 4 | 3.48% | 4 | 3.48% |
| No | 74 | 64.35% | 33 | 28.69% |
| Indications for caesarean birth | | | | |
| Fetal distress | 2 | 50% | - | - |
| Arrest of descent | - | - | 4 | 100% |
| High blood pressure | 1 | 25% | - | - |
| Occiput posterior position | - | - | - | - |
| Unsuccessful induction of labor | 1 | 25% | - | - |
| Duration of active labor | | | | |
| 1 hour | - | - | - | - |
| 2 hours | 11 | 9.56% | 3 | 2.60% |
| 3 hours | 18 | 15.65% | 10 | 8.70% |
| 4 hours | 12 | 10.43% | 6 | 5.22% |
| 5 hours | 9 | 7.82% | 3 | 2.60% |
| 6 hours | 5 | 4.35% | 2 | 1.74% |
| 7 hours | 3 | 2.60% | 2 | 1.74% |
| 8 hours | 16 | 13.91% | 7 | 6.09% |
| No answer | 4 | 3.50% | 4 | 3.50% |
| Degree of pain perception during labor | | | | |
| Absence of pain | - | - | - | - |
| Little painful | 10 | 8.70% | 2 | 1.74% |
| Quite painful | 29 | 25.21% | 7 | 6.09% |
| Very painful | 28 | 24.35% | 10 | 8.70% |
| Most painful | 11 | 9.56% | 18 | 15.65% |
| Positive influence of the position taken during labor | | | | |
| Yes | 62 | 53.91% | 6 | 5.22% |
| No | 16 | 13.91% | 31 | 26.96% |

Table 2: Labor in free positions vs lithotomic position.

From the comparison deriving from the analysis of the data of the two subsections it emerged that women who labored in free position had greater pain control through various practices[1-3,9] such as movement (59.13%), use of free positions (45.21%), breathing (42.60%), vocalizations (23.47%) against those who labored in the supine position who could only resort to breathing (29.56%), massages (6.95%), vocalizations (4.34%) and use of the shower (2.61%). This trend is also reflected in the choice of the position taken by the woman, in fact, in labor in the lithotomy position 20% faced it in the supine position and 6.10% of them assumed a semi-supine position or on the side likewise.

On the other hand, in labor in free positions, the choice was very heterogeneous, in fact in 23.49% the standing position was favored, squatting in 9.56%, with the use of birthing ball in 8.69% and on all fours and/or with liana in 6.95% of cases. Another relevant aspect that emerges from the different management of labor was the auscultation of the fetal heartbeat (BCF) in fact, in labor in the supine position it was carried out continuously (21.74%) on the contrary in free positions where auscultation was intermittent (44.35%).

With regard to the need to resort to an emergency caesarean section in labor, the analysis of the data also shows a recourse to the same in 3.48% due to fetal distress (50%), blood pressure rise (25%) and lack of response to induction (25%) in women who labored in free position, while in women who labored in lithotomy position, the only cause found was a lack of progression of the part presented (100%).

The duration of labor was then analyzed, which in women who labored in free position was found to be over three hours in 15.65%, over four hours in 10.43% and over eight hours in 13.91% of cases with 3.50% of cases. no response. On the other hand, in women who labored in the supine position, labor was more than three hours in 8.70% of cases, more than four hours in 5.22%, more than 8 hours in 6.09% of cases with a non-response rate of 3.50%.

Finally, the degree of perception of pain and the influence of the position [1-3,9] assumed in labor on the painful component [2,4,6,9-11] was considered with a positive response in 53.91% of women who had the opportunity to assume free positions and a fairly painful perception in 25.21% and very painful in 24.35%.

On the other hand, 26.96% of women who labored in the lithotomy position reported not having any benefit in pain management with a perception of the same reported very painful in 8.70% and very painful in 15.65% of cases.

The third section examined the expulsive period and, in labor with free positions and in the supine position (Table 3). It should be noted that from the initial sample made up of 115 women, 8 were excluded as they underwent a caesarean section.

| Expulsive period | | | | |
|--|---|-----------|--|-----------|
| | Expulsive period in free positions | | Expulsive period in supine position | |
| | fa | fr | fa | fr |
| Oxytocic infusion | | | | |
| Yes | 3 | 2.80% | 12 | 11.20% |
| No | 28 | 26.20% | 64 | 59.80% |
| Duration of expulsive period | | | | |
| < 1 hour | 22 | 20.56% | 59 | 55.14% |
| > 1 hour | 9 | 8.41% | 17 | 15.88% |
| Fetal heart rate (FHR) auscultation | | | | |
| Continuously | 8 | 7.47% | 28 | 26.16% |
| Intermittently | 8 | 7.47% | 22 | 20.56% |
| No auscultation | 15 | 14.02% | 26 | 24.29% |
| Position of fetal expulsion | | | | |
| Lithotomic | - | - | 75 | 70.09% |

| | | | | |
|---|----|--------|----|--------|
| Right side | - | - | 1 | 0.93% |
| Left side | - | - | - | - |
| On all fours | 5 | 4.67% | - | - |
| Squatting | 7 | 6.54% | - | - |
| Kneelling | 3 | 2.80% | - | - |
| Water | 3 | 2.80% | - | - |
| Sitting | 13 | 12.15% | - | - |
| Kristeller's maneuver needed | | | | |
| Yes | 5 | 4.67% | 32 | 29.90% |
| No | 26 | 24.30% | 44 | 41.12% |
| Episiotomy | | | | |
| Yes | 6 | 5.60% | 45 | 42.05% |
| No | 25 | 23.36% | 31 | 28.97% |
| Operative vaginal delivery | | | | |
| Yes | - | - | 3 | 2.80% |
| No | 31 | 28.97% | 73 | 68.22% |
| Presence of vagino-perineal lacerations | | | | |
| Yes | 16 | 14.95% | 44 | 41.12% |
| No | 15 | 14.02% | 32 | 29.90% |
| Post partum haemorrhage | | | | |
| Yes | 2 | 1.87% | 5 | 4.67% |
| No | 29 | 27.10% | 71 | 66.35% |
| Degree of pain perception during the expulsive period | | | | |
| Absence of pain | 3 | 2.80% | 2 | 1.87% |
| Little painful | 7 | 6.54% | 16 | 14.95% |
| Quite painful | 6 | 5.60% | 21 | 19.63% |
| Very painful | 7 | 6.54% | 14 | 13.08% |
| Most painful | 8 | 7.47% | 23 | 21.49% |
| Positive influence of the position taken during expulsive period | | | | |
| Yes | 26 | 24.30% | 15 | 14.02% |
| No | 5 | 4.67% | 61 | 57.00% |
| Baby blues | | | | |
| Yes | 2 | 1.87% | 19 | 17.75% |
| No | 29 | 27.10% | 57 | 53.27% |
| Post partum depression | | | | |
| Yes | - | - | 7 | 6.54% |
| No | 31 | 28.97% | 69 | 64.48% |

Table 3: Expulsive period: free positions vs lithotomic position.

One of the parameters taken into consideration was the duration of the expulsive period where in the expulsive periods completed in free positions the duration was < 1 hour in 20.56% of cases and > 1 hour in 8.41% of cases.

On the other hand, in cases in the supine position, 55.14% of cases had an expulsive period < 1 hour and 15.88% > 1 hour. Also, for the BCF auscultation it can be seen that during the expulsive period with free positions it was perceived in 7.47% in continuous vs 26.16% in supine position, in 7.47% intermittently vs 20.56% in supine position. Regarding the expulsion of the fetus in free positions we can say that this occurred on all fours in 4.67% of cases, squatting 6.54% of cases, kneeling 2.80% of cases as well as in water, and 12.15% in a sitting position. opposite of the 70.09% who performed the birth in the lithotomy position. Another relevant aspect was the execution of any obstetric maneuvers [14,16-18] such as the Kristeller maneuver which in free expulsions was performed only in 4.67% compared to 29.90% of expulsions in the supine position and episiotomy performed only in 5.60% in the first. case and in 42.05% in the second, the validity of carrying out an expulsion in free positions is also evident from the scarce presence of vagino-perineal lacerations, in 14.95%, which reaches 41.12% of cases in the supine position.

A considerable figure was the degree of perception of pain by women during the expulsive period, in fact, in free positions it ranges from 2.80% of absence of pain to 7.47% of perception defined as very painful Vs in the supine position the degree of painful perception varies from 1.87% of absence of pain to 21.49% of very painful perception.

Finally, from the analysis of the data it emerged that there is a positive influence of the position assumed during the expulsive period in 24.30% of cases in the expulsive period in free positions against 57% of women who gave birth in the lithotomy position who reported not having received any benefit.

Discussion

The aim of the study was to evaluate how the freedom of movement for women during labor and childbirth could influence or not the progress of labor/delivery itself, also evaluating the psycho-emotional and physical benefits that could derive from it. From the survey conducted on 165 women after excluding those who had requested analgesia and those who underwent a caesarean section. The various factors that could have influenced the progress [14,16-18,21-23,39-42] of labor/delivery were analyzed, such as: free positions [1-9,14-18] and environmental factors [14-18,21]. The position, during the different phases of labor (latent, active and expulsive period), assumes relevance in the normal progression of labor by intervening on the duration, frequency and intensity of contractile activity being also favored by the force of gravity [1-10,19,43]. Certain positions affect the alignment of the different diameters of the pelvis favoring the descent of the part presented through the birth canal while helping the woman psycho-emotionally allowing her a different perception of pain (promoting birth, who), in fact (physiology of birth) turns out to be a complex and subjective phenomenon, which varies from person to person and is related to the psychological state [1,10,21,44]. Characteristics of pain in childbirth are the rhythmicity and intermittence made of alternating pain and pause, contraction and relaxation [1-3,10,12,22]. The natural response to pain is movement [45] and from the analysis of the results, in fact, it was found that pregnant women change position according to the painful perception, assuming the most pain-relieving posture [1-4,10-13,20,46]. If the imposed position, whatever it may be, does not help the physiological progress of childbirth, it is not appropriate to force the woman into a perceived uncomfortable position as this state also generates a stress that does not facilitate the birth event, as evidenced by the data collected where 26.96% stated that the supine position assumed during labor had no positive influence and even reaching 57% during the expulsive period. The data collected (Table 2) show how the pain containment techniques used by women were movement (59.13%), breathing (42.60% against 29.56% in the supine position), massage 17.39% vs 6.45%), while between free positions (45.21%) the one most assumed was the vertical (23.49%) [20].

Another factor that underlined the importance of the position assumed is the auscultation of the fetal heartbeat, in fact, during the first phase of labor, the movement, even if granted, is limited if not prevented by the “need” of having to auscultate the heartbeat even during physiological labor. (Continuous auscultation: 23.48% in free positions versus 21.74% in the supine position.

Intermittent auscultation: 44.35% in free positions and 10.43% in the supine position). By virtue of this “necessity” also the expulsive

period is carried out in the supine position [14,16-18,31,46]. Numerous damages and risks derive from this constricting conduction, such as more painful contractions (in free positions in 9.56% and in supine labor of 15.65%, the expulsive period was perceived as very painful in 7.47% in the first case and 21.49% in the period expulsive lithotomy) but less effective with a greater lengthening of labor times and greater use of synthetic oxytocin both in labor (Table 2) and in the expulsive period (Table 3).

Other risks that the woman may run into being unable to naturally indulge the expulsive forces are those of an excessive recourse to the use of the Kristeller maneuver (4.67% in expulsive in free positions against 29.90% in expulsive in lithotomy), a "increased probability of an operative vaginal birth (non-existent in the free positions against 2.80% of the expulsive period performed in the supine position) or of a caesarean section (64.35% in free positions - 28.69% in the supine position) due in all cases to stopping the progression of the presented part [46] and finally being subjected to an episiotomy. In confirmation of the data collected (in free positions 5.60% against 42.05% in the expulsive period) the scientific evidence states that the routine use of this practice should be abandoned and used only in situations of real urgency, i.e. those related to alterations in the fetal heart beat [14,16-18]. Performing an episiotomy also predisposes the woman to be able to have a perineal laceration at the next birth.

In this regard we can underline that from the analyzed data the occurrence of perineal lacerations is present in the expulsive period in free position in 14.95% of cases against 41.12% of expulsive periods in lithotomy position.

Research Limits

Limitations of the study were in the type of sampling chosen, of convenience that did not allow a representation of the entire study population; in the bureaucratic difficulties related to the authorization to collect data within the individual structures. And finally from the nature of the study which, being descriptive, did not allow an inferential analysis of the data.

Conclusion

It is known that bed coercion is one of the most common care practices in addition to the use of cardiotocography [14,16,21]. It is also known that depriving a woman of the freedom to move, to manage pain and to become aware of herself in a context that is completely new to her, such as labor and childbirth, leads to living the experience with passivity and suffering (as well as physical, also emotional) [9,14-16,21-29,37].

The analysis of the literature [1-37] has shown how the freedom of movement and choice of the analgesic position during labor and the expulsive period improve the overall experience of childbirth: labor times are reduced, there is a lower rate of recourse to episiotomy [14-16], although the lithotomic positions showed a slight risk of second degree lacerations and post partum haemorrhage [14-16]. What we have tried to highlight through this study is that using free positions during labor/delivery there are evident benefits for the psycho-physical health of the woman, such as a minor use of episiotomy or Kristeller's maneuver; freedom of movement has shown to make women satisfied and fully aware of having actively lived one of the most important moments of her life: the birth of her child.

In fact, women who had the freedom to move openly declared that freedom of movement improved the experience of labor and the perception of pain [15,21,29,33,36,38], as well as the ability to choose the most comfortable position during the expulsive period. In conclusion, the task of the health care professionals is to ensure accurate monitoring of fetal well-being, leaving the woman the freedom to choose the analgesic position.

Conflict of Interest

None.

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